

SPIDERS OF THE FAMILY LYCOSIDAE (ARANEI) FROM THE SOKHONDO RE-
SERVE (CHITA AREA, EAST SIBERIA)

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This study was partly supported by grants ISF NOG000, NOG300 and
INTAS 94-3708.

Abstract: Lycosid spiders (Aranei, Lycosidae) from the Sokhondo
Reserve, Chita Area, East Siberia are reported. The following
species are described for the first time: Alopecosa sokhondoensis
Alopecosa zyuzini, Pardosa bukukun and Pardosa baraan; Pardosa
adustella ROEWER, 1951 is revised, P. anchoroides YU & SONG, 1988
is regarded as a probable synonym of adustella.

Introduction

Information about one of the most abundant spider families - Ly-

cosidae - from Chita Area can be found in two major publications of IZMAILOVA, 1989 and DANILOV, 1990. Both deal with the whole spider fauna of Transbaikalia. Altogether 18 species of Lycosidae were recorded from Chita Area (all from northwest districts). The two above mentioned publications include many incorrect determinations or invalid names (eg. Pardosa adusta (see below). Lycosid spiders from the Sokhondo Reserve were regarded in a short paper of DANILOV and KURTOVA, 1991. They were: Alopecosa aculeata (CLERCK), A.albastriata (GRUBE), Pardosa buryatica STERNBERGS (= P.adustella ROEWER), P.lyrata (ODENWALL), P.pallustris (LINNAEUS), and P.schenkeli LESSERT. Recently, a large Entomological expedition was undertaken in the Sokhondo Reserve and a large quantity of spider material was collected there. 31 species of lycosid spiders were found within this material. The present paper is devoted to the description of four new species as well as to description of the spatial distribution of the wolf spiders of the Sokhondo Reserve. One new species of Acantholycosa mentioned in the table will be described by A.A.ZYUZIN in a separate paper.

Type material has been shared between the collections of the Zoological Museum of the Biological Institute, Novosibirsk (BI), Jörg WUNDERLICH's private collection, Straubenhardt (JW), the Zoological Museum of Moscow State University (ZMMU), the Zoological Institute, St.Petersburg (ZIL) and Institute for Biological Problems of the North, Magadan (IBPN).

Common abbreviations for eyes and their interdistances have been used in the text. All measurements are given in mm. The scale is 0.1 mm.

Alopecosa sokhondoensis sp.n. Figs. 1-3, 7-8, map

Material: Holotype ♂ (BI-1092), USSR, Chita Area, Kyra Distr., Sokhondo Reserve, 20 km NW of Nizhni Bukukun Vill., confluence of Yornichny Spring and Bukukun River, valley birch-larch forest, 1400-1500 m, litter, 2-3.06.1991 (D.V.LOGUNOV). Paratypes: 4♂ (JW), 2♀ 17♂ (BI-1093), together with holotype; 17♀ (IBPN), Yakutia, down flow of Amga River (left tributary of Aldan River), environs of Mikhailovka Vill., larch forest, 8.08.1987 (N.N.VINOKUROV)

Derivatio nominis. This species was named after the type locality.

Measurements (male/female). Carapace: 2.65-2.88/2.75-3.18 long, 1.88-2.00/2.13-2.28 wide, carapace length/width ratio 1.41-1.44/1.30-1.40. Abdomen: 2.25-2.50/4.63-4.75 long, 1.53-1.7-5/3.00-3.08 wide. Clypeus height 0.10-0.11/0.10-0.13. Eye sizes and interdistances: AME 0.09/0.09, ALE 0.09/0.09, PME 0.27/0.30, PLE 0.21/0.23, AME-AME 0.06/0.09, AME-ALE 0.04/0.06, PME-PME 0.23/0.30, PME-PLE 0.33/0.40.

Description. Male. Uniformly reddish brown, eye field and lateral sides of carapace dark reddish brown. Apical part of abdomen with cluster of black setae. Abdomen without pattern. Palp as in figs. 1-3, with large tegular apophysis, curved tip of embolus and thin terminal apophysis. Projection of the tegular apophysis semitransparent.

Female. Colouration essentially as in male. Abdomen with indistinct reticulate pattern dorsally. Epigyne as in figs. 7-8, with short and wide septum and relatively short ducts of spermathecae.

Diagnosis. A. sokhondoensis sp.n. is closely related to Chinese species A.zhui (YU et SONG, 1988) comb.n. known by females only. New species can be distinguished from A.zhui by the shorter and wider ducts of spermathecae, and by the shape of epigynal septum. Males of A.sokhondoensis sp.n. are similar to those of A.zyuzini sp.n., and the two species can be easily separated by the shape of embolus, terminal apophysis and by the position of tegulum.

Habitat. This species was found in leaf litter of the mixed birch-larch forest.

Alopecosa zyuzini sp.n. Figs. 4-6, 9-12, map

Material: Holotype ♂ (BI-1106), USSR, Chita Area, Kyra Distr., 3 km E of Kyra Vill., Kyra River valley, 850m, upland (dry) meadow, 30.05.1991 (D.V.LOGUNOV). Paratypes: 5♀ (BI-1107) together with holotype; 1♀ (BI-1108) same locality, 19.06.1991 (D.V.LOGUNOV). Tuva: 10♂7♀ (BI-1098,1102), 3♂ 3♀ (JW), Erzin Distr., 20 km NW of Erzin Vill., Tes-Khem River, 800-850m, feather-grass-vermuth steppe, 31.05-4.06.1989 (D.V.LOGUNOV); 1♀ (BI-1103) same locality, 11-12.08.1989 (D.V.LOGUNOV); 15♂ 11♀ (BI-1095,1099) 4♂ 4♀ (ZMMU, Ta-4664), Erzin Distr., 20-25km W of Erzin Vill., Onchalaan Mt. Range, 1300-1350m, feather-grass-vermuth steppe, 27.05-2.06.1989 (D.V.LOGUNOV); 10♂8♀ (BI-1100), Erzin Distr., 20 km NW of Erzin Vill., Dus-Khol' Lake, 850-900m, 31.05.1989 (D.V.LOGUNOV); 1♀ (BI-1101), Erzin Distr., 30-35km NE of Erzin Vill., confluence of Ular-Khem and Erzin Rivers, 1200-1300m, slope steppe, 11.06.1989 (D.V. LOGUNOV); 1♂ (BI-1104), Erzin Distr., Tere-Khol' Lake, Eder-Elezin Sands (Sand Desert), 1150-1-200m, feather-grass-vermuth steppe, 29.05.1989 (D.V.LOGUNOV); 2♂ 5♀ (ZMMU, Ta-4652), 3-5 km W of Kyzyl Town, Yenisey River Valley, 700-750m, Lasiogrostitis-splendens steppe, 25.05.1985 (D.V. LOGUNOV); 2♀ (BI-1094), Mongun-Taiga Distr., 3km SE of Mugur-Aksy Vill., environs of the Antiplateau station, 1800-1850m, mountain steppe, 14.06.1989 (D.V.LOGUNOV); 2♀ (BI-1097), Mangun-Taiga Distr., 12km SE of Mugur-Aksy Vill., Kargy River valley, 1750-1800m, 14.06.1989 (D.V.LOGUNOV); 1♀ (BI-1105), Mongun-Taiga Distr., 3-5 km N of Kyzyl-Khaya Vill., right bank of Mogen-Buren

River, moraine, 15.06.1989 (D.V.LOGUNOV); 2♂1♀ (BI-1096), Ovyur Distr., Tere-Khol' Lake, 735m, Lasiogrostitis splendens - Leymus racemosus steppe, 12.06.1989 (D.V.LOGUNOV).

Derivatio nominis: This new species was gladly named after our friend and colleague ALEXEI A. ZYUZIN (Alma-Ata), the best specialist on lycosids in the USSR.

Measurements (male/female). Carapace 2.50-3.00/2.85-3.58 long, 1.70-2.10/1.89-2.50 wide, length/width ratio 1.43-1.47/1.43-1.44. Abdomen: 2.25-2.50/2.93-4.00 long, 1.35-1.60/2.03-2.40 width. Clypeus height - 0.09-0.11/0.14-0.17. Eye sizes and interdistances: AME 0.08/0.11, ALE 0.07/0.10, PME 0.21/0.24, PLE 0.19/0.21; AME-AME 0.09/0.07, AME-ALE 0.06/0.06, PME-PME 0.26/0.26, PME-PLE 0.31/0.34.

Description. Male. Colouration variegated. Carapace reddish with 2 wide submarginal red brown bands, eye field black. Submarginal covered with black setae, other parts of carapace covered with white setae. Sternum and chelicerae light brown. Maxillae and labium yellowish. Abdomen dark grey dorsally with wide white-cream coloured median band. Abdomen whitish cream-coloured ventrally. Spinnerets orange. Legs variegated, all segments yellow ventrally, dorsally and laterally yellow with longitudinal red brown spots and bands. Palp as in figs. 4-6, with relatively wide terminal apophysis and transparent projection (ridge). Female. Colouration essentially as in male. Epigyne as in figs. 9-12, somewhat variable in size and shape.

Diagnosis. New species can be easily distinguished from other Alopecosa species by the shape of the male palp and epigyne. Males are somewhat similar to the sympatric A. sokhondoensis sp.n. species, from which it can be distinguished by the pointed embolus, wider terminal apophysis, and more transparent projection of the tegular apophysis.

Habitats. This species occurs in wormwood - feather-grass and Lasiogrostitis splendens - Leymus racemosus steppe, and in upland (dry) meadows on the river valleys.

Pardosa bukukun sp.n. Figs. 13-19, map

Material: Holotype ♂ (BI-1109), USSR, Chita Area, Kyra Distr., Sokhondo Reserve, 3-5 km SW of Buninda Spring and Agutsa River confluence, slope steppe with alders, 1200-1300m, 15.06.1991 (D.V.LOGUNOV). Paratypes: 11♂3♀ (BI-1110) together with holotype; 2♂2♀ (JW) and 11♂2♀ (BI-1111), same locality, confluence of Bukukun River and Yernichny Spring, 1200-1300m, slope steppe with alders, 4.06.1991 (D.V.LOGUNOV); 2♂ (BI-1112), same place, 28.06.1991 (B.P.ZAKHAROV).

Derivatio nominis: The specific name is a noun in apposition after the Bukukun River, situated in the type locality.

Measurements (male/female). Carapace: 1.98-2.40/2.40 long, 1.50-1.73/1.70-1.73 wide, length/width ratio 1.32-1.39/1.39-1.41. Clypeus height 0.10-0.14/0.14-0.17. Eye sizes and interdistances: AME 0.9/0.09, ALE 0.06/0.09, PME 0.23/0.23, PLE 0.17/0.20, AME-AME 0.09/0.09, AME-ALE 0.03/0.04, PME-PME 0.26/0.31, PME-PLE 0.33/0.39.

Description. Male. Carapace reddish brown with yellow-orange median band and 2 thin submarginal bands, eye field black. Sternum yellow with 2 reddish brown bands. Chelicerae yellow with reddish brown band anteriorly. Labium and maxillae yellow with white apical parts. Abdomen dark reddish brown laterally and with reddish median band, anterior part with lanceolate spot, ventrally yellow-orange with reddish brown dots. Ventral spinnerets dark reddish brown, median - reddish. Palps dark reddish brown. Legs I an II yellow with red-brownish femora, legs III and IV reddish with reddish brown femora. Carapace and femora of all legs covered with small luminescent scales, and living specimens like blue. Palp as in Figs. 13-16, with small tegular apophysis, pointed conductor and terminal apophysis, area between conductor and terminal apophysis with numerous triangle denticles (spines).

Female. Colouration similar to that in male, but more pale. Palps yellow with brown dots. Abdomen ventrally with two rows of reddish brown spots. Epigyne as in figs. 17-19 with very thin septal ridge and lips, small septum.

Diagnosis. The new species belongs to P. bifasciata group sensu ZYUZIN, 1979. P. bukukun sp.n. is very similar to sympatric P. schenkeli LESSERT, 1904. Males of the two species can be separated by the longer conductor and pointed tip of terminal apophysis in P. bukukun sp.n., as well as by the smaller tegular apophysis. Females of P. schenkeli have a wider septal ridge and far separated lips in the apical part, wider basal part of receptacula. Females of the new species are also similar to those of P. hanra-sanensis JO et PAIK, 1984 (Korea), from which they can be separated by a shorter basal part of the septum, and the shape of spermathecal ducts.

Habitats. Slope steppe, near rocks on alder leaf litter.

Pardosa baraan sp.n. Figs. 25-29, 33, map

Material: Holotype ♂ (BI-1089), USSR, Chita Area, Kyra Distr., Sokhondo Reserve, Agutsa house, Kumyl' Natural Limit, 1100m, mesophytic meadow near water, 16.06.1991 (D.V.LOGUNOV). Paratypes: 2♂ 3♀ (BI-1090) and 1♂3♀ (JW) together with holotype; 4♂3♀ (BI-1091) Tuva, Tes-Khem Distr., about 30km NW of Khol'-Oozhu

VIII., East Tannu-Ola Mt. Range, Kara-Khol' Lake, 1740m, moist mesophytic meadow 9.07.1989 (D.V.LOGUNOV). Mongolia: lif (ZMMU), Hovsgol Aimak, Bayang ol, mountain tundra, 24.06-4.07.1986 (T.ENK-HTUYA); 1♂1♀ (ZIL), West Mongolia, between Ulan-Bator and Khobdo, Summer 1949 (EGLONYA).

Derivatio nominis: The name for this species is derived from the Mongolian word "baraan", meaning "dark".

Measurements (male/female). Carapace: 3.90-4.50/3.90-4.00 long, 3.00-3.25/2.80-2.90 wide, length/width ratio 1.30-1.38/1.3-8-1.39. Clypeus height 0.29-0.35/0.27-0.31. Eye sizes and interdistances: AME 0.14/0.14, ALE 0.14/0.14, PME 0.40/0.36, PLE 0.26/0.30, AME-AME - 0.11/0.13, AME-ALE 0.03/0.03, PME-PME 0.46/0.36, PME-PL 0.53/0.50.

Description. Male. Carapace reddish brown with 2 yellow submarginal bands and yellow median longitudinal spot posteriorly. Clypeus yellow. Sternum dark reddish brown. Maxillae, chelicerae and labium brown. Abdomen dark brown with dorsal lanceolate spot. Coxae reddish brown, other leg segments yellow, while femora on lateral and ventral sides, patellae and tibia on dorsal sides with distinct reddish brown hue. Palp as in figs. 25-27.

Female. Colouration essentially as in male but, legs dark: variegated yellow - reddish brown. Epigyne as in Figs. 28-29 & 33, with wide basal part of the septum. Septal ridge length variable.

Diagnosis. The new species is closely related to P.tyshchenkoi ZYUZIN et MARUSIK, which is known from the Northeast Siberia (ZYUZIN, MARUSIK, 1989), and belongs to the same species group. Males of P.baraan sp.n. can be distinguished from those of P.tyshchenkoi by the longer and more curved embolus and the shape of the terminal apophysis. Females of new species have wider lips of the septal ridge.

Habitats. Moist mesophytic meadow near water.

Pardosa adustella ROEWER, 1951. Figs. 34-35.

Lycosa adusta ODFNWALL, 1901: from Transbaikalia.

Pardosa adustella ROEWER, 1951: new name for L.adusta.

Pardosa anchoroides YU et SONG, 1988: 27-28, figs. 1-5 (♂ & ♀), probably syn.n.

Comments: According to the figures (1-5 in YU, SONG, 1988) of P.anchoroides, described from Inner Mongolia, China, this species undoubtedly belongs to P. adustella group. The shape of epigynal septum and the distribution of the former species suggest that P. anchoroides and P. adustella are conspecific.

The adustella groupe comprises no less than 3 species: P.oljunae LOBANOVA (whole West Siberia), P.adustella (Central and East Siberia, including Mongolia and North China) and P.moesta BANKS (North America from Alaska east to Newfoundland (DONDALE, REDNER, 1990).

The two Siberian, species can be easily distinguished by the shape of the epigynal septum and the terminal part of the bulb (figs. 34-37). Note: distance between epigynal lips of is variable.

Pardosa paratesquorum SCHENKEL, 1963: First record in Russia and northernmost point of distribution.

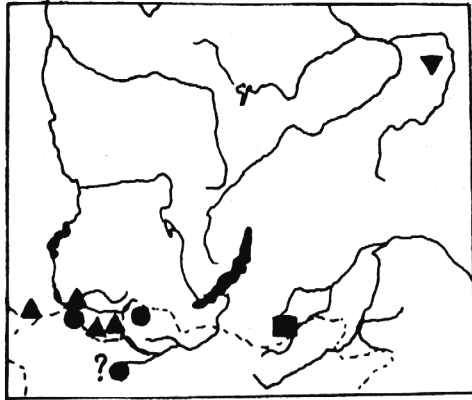
Pardosa sadalis HOLM, 1970: The Sokhondo Reserve is the southernmost point of distribution. Before the species was known to be distributed from Putorana Plateau to the mouth of the Mackenzie River (Canada), south to northeast Transbaikalia (KRONESTEDT, 1986).

Spatial distribution of lycosids

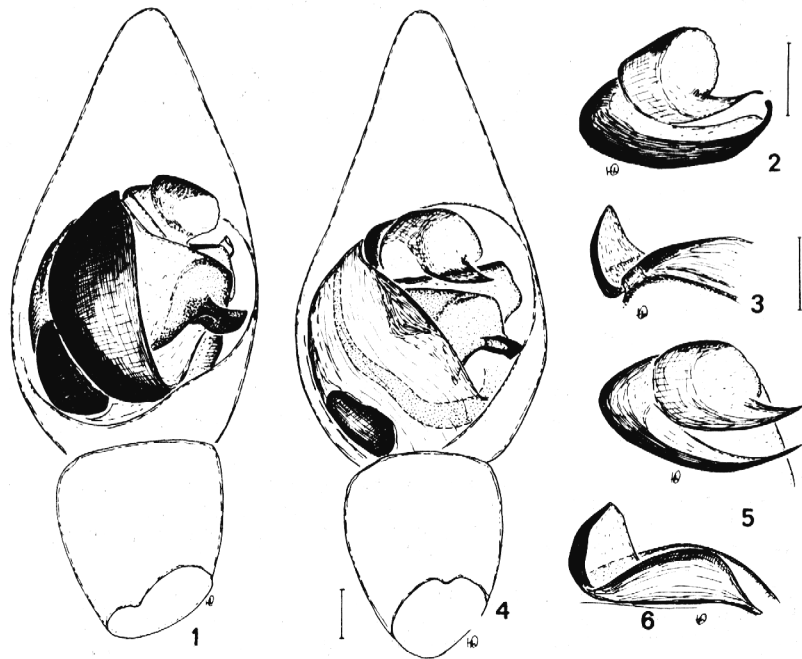
All biotopes which are present in the Sokhondo Reserve can be grouped in 5 main units (marked by the latin figures I-V) and 13 subunits (marked by the arabic figures).

- I. Basin (hollow) shrub-stony steppe.
- II. Mountain forest-steppes.
 1. Birch-larch forests.
 2. Slope shrub steppes with alder.
- III. Mountain taiga forests.
 1. Deciduous and mixed forests.
 2. Talus (scree).
- IV. Mountain tundra.
 1. Moss-lichen tundra (incl. bogged up sites).
 2. Dryas and stony tundra.
 3. Talus (scree).
- V. Intrazonal Vegetation.
 1. Inundated (river valley) poplar stands.
 2. Inundated (river valley) spruce forests.
 3. Inundated (river valley) moist meadows.
 4. Upland (dry) meadows.
 5. Shrub bogs (low alder thicket) (alder yernik).
 6. Shingle (rubble) beds.

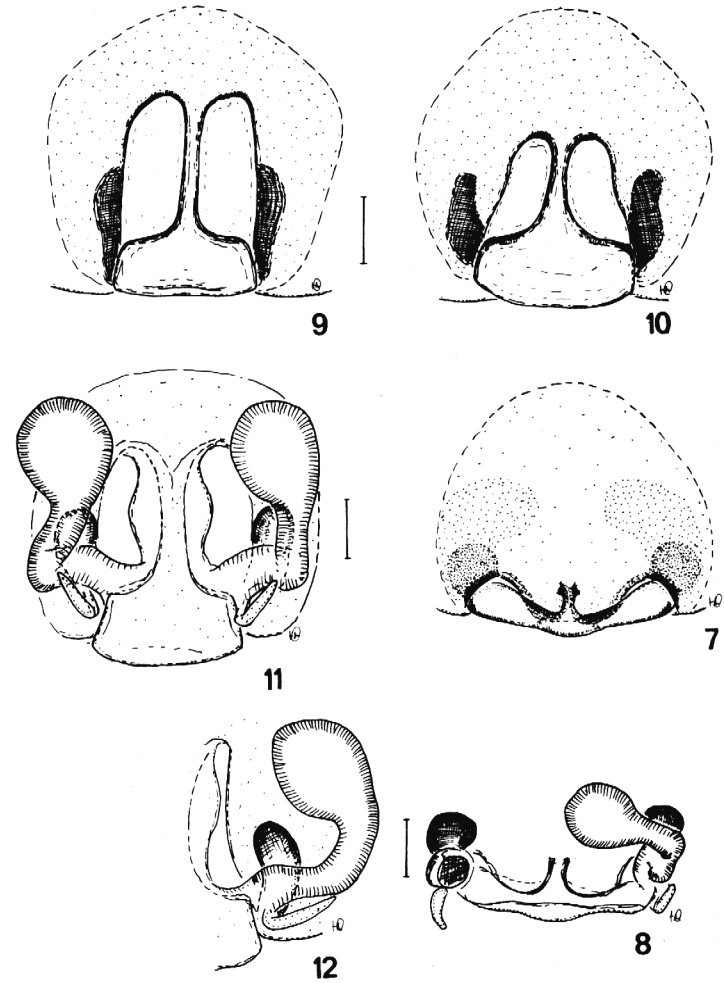
Distribution of all wolf spiders is shown in the table given below.



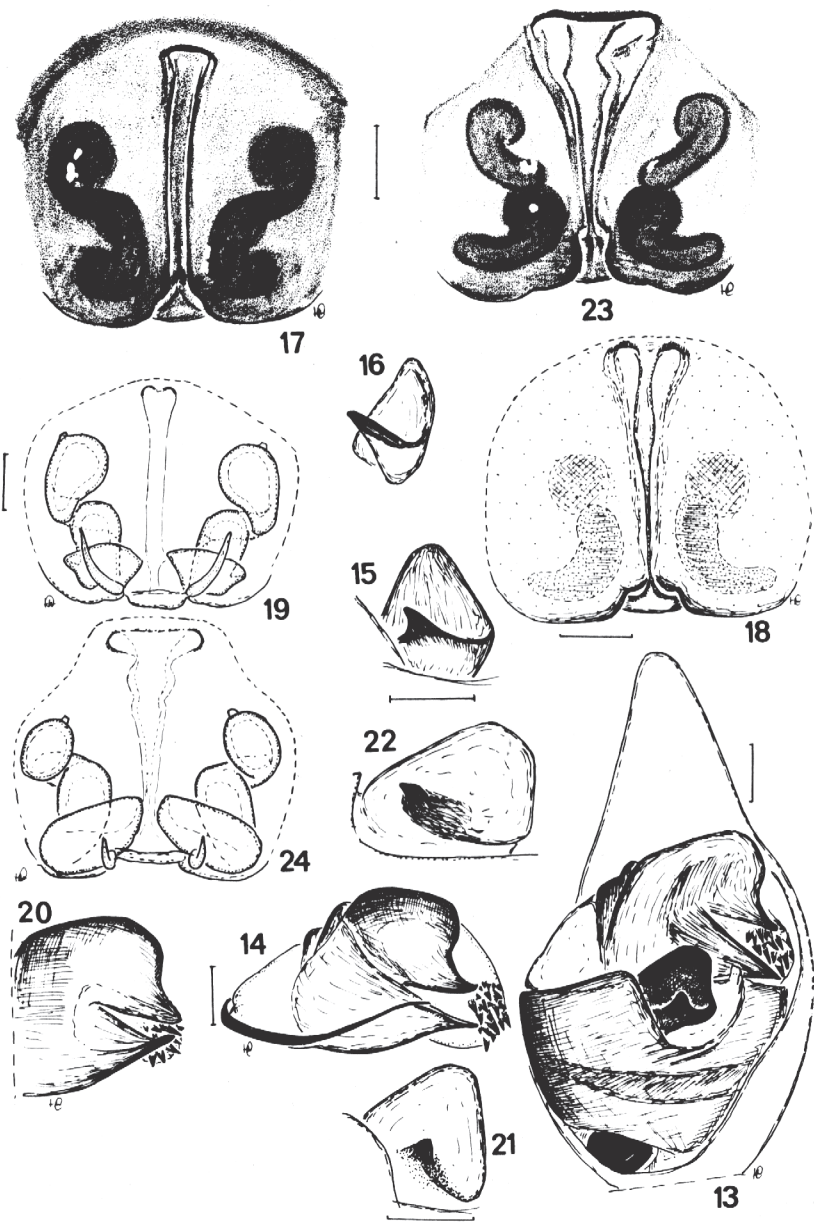
Map: Distribution of the new species: type localities of all species, the Sokhondo Reserve (square), *A. sokhondensis* sp.n. (inverted triangles), *A. zyuzini* sp.n. (triangles) and *P. baraan* sp.n. (circles).



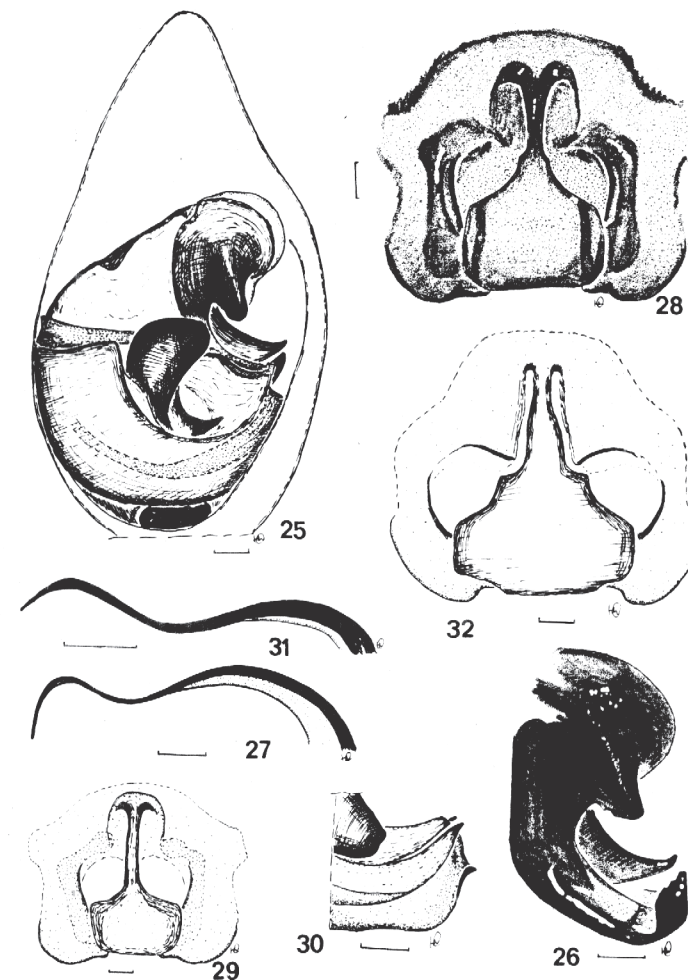
Figs. 1-6. Male palps of *Alopecosa sokhondoensis* sp.n. (1-3) and *A. zyuzini* sp.n. (4-6).
1, 4 - palp, ventral view; 2, 5 - terminal apophysis and embolus, ventral view; 3, 6 - tegular apophysis, apical view.



Figs. 7-12. Epigynes of *Alopecosa sokhondensis* sp.n. (7-8) and *A. zyuzini* sp.n. (9-12).
7, 9, 10 - epigyne, ventral view; 8, 11 - epigyne, dorsal view; 12 - half of epigyne, dorsal-lateral view. Note: 11 - left receptaculum broken.



Figs. 13-24. Copulatory organs of *Pardosa bukukun* sp.n. (13-19) and *P. schenkeli* (20-24).
 13 - male palp, ventral view; 14, 20 - terminal part of the bulbus, ventral view; 15, 22 - tegular apophysis, ventral-basal view; 16 - tegular apophysis, ventral-lateral view; 17, 18, 23 - epigyne, ventral view; 19, 24 - epigyne, dorsal view; 21 - tegular apophysis, ventral view.



Figs. 25-32. Copulatory organs of *Pardosa baraan* sp.n. (25-29), and *P. tyshchenkoi* (30-32) (specimens from the Upper Kolyma, NE Siberia).
 25 - male palp, ventral view; 26, 30 - terminal part of the bulbus, ventral view; 27, 31 - embolus, apical view; 28, 29, 32 - epigyne, ventral view.

Spatial distribution of Lycosidae in the Sokhondo Reserve

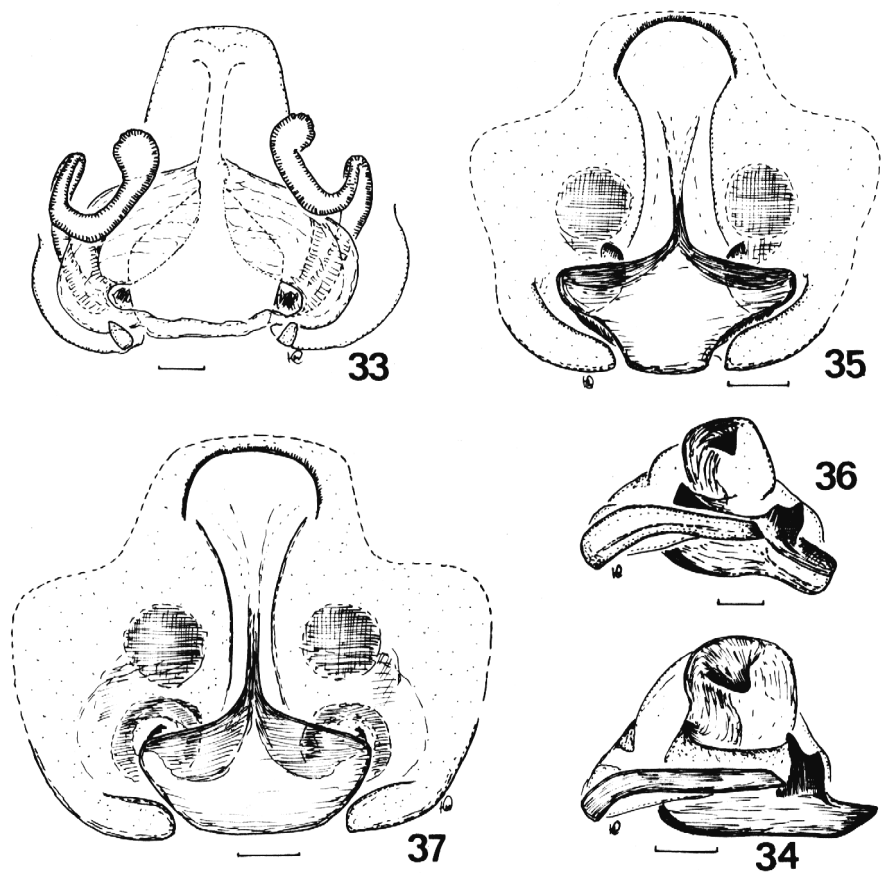
	I		II		III		IV			VI					
	1	2	1	2	1	2	1	2	3	1	2	3	4	5	6
<i>Acantholycosa aborigenica</i> ZYUZ., MAR.															
<i>Acantholycosa norvegica</i> (THORELL)				+											
<i>Acantholycosa</i> sp.															
<i>Alopecosa aculeata</i> (CLERCK)															
<i>Al. albostrigata</i> (GRUBE)															
<i>Al. borea</i> (KULCZYNSKI)				+											
<i>Al. erudita</i> (Simon)				+											
(sensu Schenkel, 1953)															
<i>Al. pulverulenta</i> (CLERCK)															
<i>Al. sokhondoensis</i> sp. nov.															
<i>Al. zyzini</i> sp. nov.															
<i>Pardosa adustella</i> ROEWER															
<i>P. astrigera</i> (?) (L. KOCH)															
<i>P. atrata</i> (THORELL)															
<i>P. baraan</i> sp. nov.															
<i>P. bukukun</i> sp. nov.															
<i>P. eiseni</i> (THORELL)															
<i>P. indecora</i> (L. KOCH)															
<i>P. lapponica</i> (THORELL)															
<i>P. cf. lapponica</i>															
<i>P. lasciva</i> (L. KOCH)															
<i>P. licenti</i> SCHENKEL															
<i>P. lyrata</i> (ODENWALL)															
<i>P. paratesquorum</i> SCHENKEL															
<i>P. plumipes</i> (THORELL)															
<i>P. ricta</i> ODENWALL															
<i>P. schenkeli</i> LESSERT															
<i>P. selengensis</i> STERNBERG															
<i>P. sodalis</i> HOLM															
<i>P. tesquorum</i> (ODENWALL)															
<i>P. tricca</i> alpigena (DOLLESHAL)															
<i>Xerolycosa nemoralis</i> (WESSTRING)															

Acknowledgement

We are very grateful to all collectors, mentioned above, to K.G. MIKHAILOV and V.I. OVTSHARENKO, curators of ZMMU and ZIL respectively, for the opportunity to study some materials from their museums, as well as to A.A. ZUZIN who kindly checked some of our species determinations. English was checked by Ms. MOLLY DAVENPORT.

References

- DANILOV, S.N., 1990. Spider fauna of the Transbaikalia. - Fauna and ecology of the arthropods of the Trans- and Cisbaikalia, Ulan-Ude, Buryat Science Centre Press: 75-92. (In Russian).
- DANILOV, S.N., O.G. KURTOVA, 1991. Materials on the spider fauna (Aranei) of the Sokhondo Reserve. - Entomological Problems of the Cisbaikalian Region, Ulan-Ude: 34-35. (In Russian).
- DONDALE, C.D., REDNER, J.F., 1990. The insects and arachnids of Canada. Part 17. The wolf spiders, nurseryweb spiders, and lynx spiders of Canada and Alaska (Araneae: Lycosidae, Pisauridae, and Oxyopidae). Agric. Can. Publ. 1856. 383pp, figs. 1-596.
- IZMAILOVA, M.V., 1989. Spider fauna of the South-east Siberia. - Irkutsk Univ. Publ.: 184pp, figs. 1-167. (In Russian).
- KRONESTEDT, T., 1986. Studies on species of Holarctic *Pardosa* groups (Araneae, Lycosidae). III. Redescriptions of *Pardosa algens* (KULCZYNSKI), *P. septentrionalis* (WESTRING), and *P. sodalis* HOLM. - Ent. scand., 17: 215-234, figs. 1-13(67).
- YU, L.M., D.X. SONG, 1988. On new species of the genus *rdosa* from China (Araneae: Lycosidae). - Acta Zootaxonomica inica, 13(1): 27-41, figs. 1-38.
- ZYUZIN, A.A., 1979. Taxonomic study of Palaearctic spiders of the genus *Pardosa* C.L. KOCH, (Aranei, Lycosidae). Part. 1. Taxonomical structure of the genus. - Entomol. Obozr., 58(2): 431-446, figs. 1-58. (In Russian).
- ZYUZIN, A.A., Yu.M. MARUSIK, 1989. A new species of spiders of the genus *Pardosa* C.L. KOCH (Araneae, Lycosidae) from Magadan Province. - Entomol. Obozr., 68(2): 432-434, figs. 1-13. (In Russian).



Figs. 33-37. Copulatory organs of *Pardosa baraan* sp.n. (33), *P. adustella* (34-35) and *P. oljunae* (36-37) (specimens from Tuva); 33 - epigyne, dorsal view; 34, 36 - terminal part of the bulb, ventral view; 35, 37 - epigyne, ventral view.